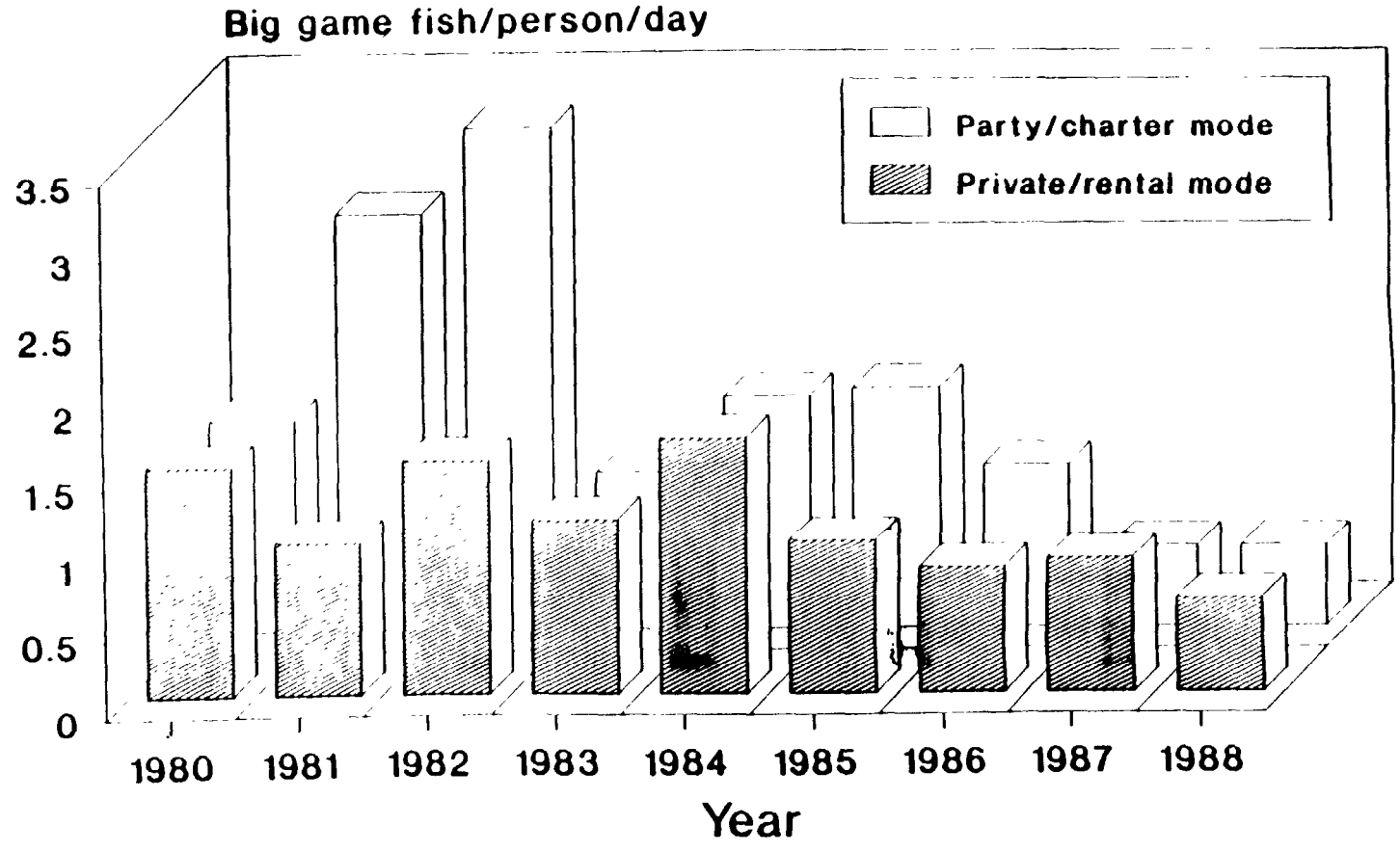
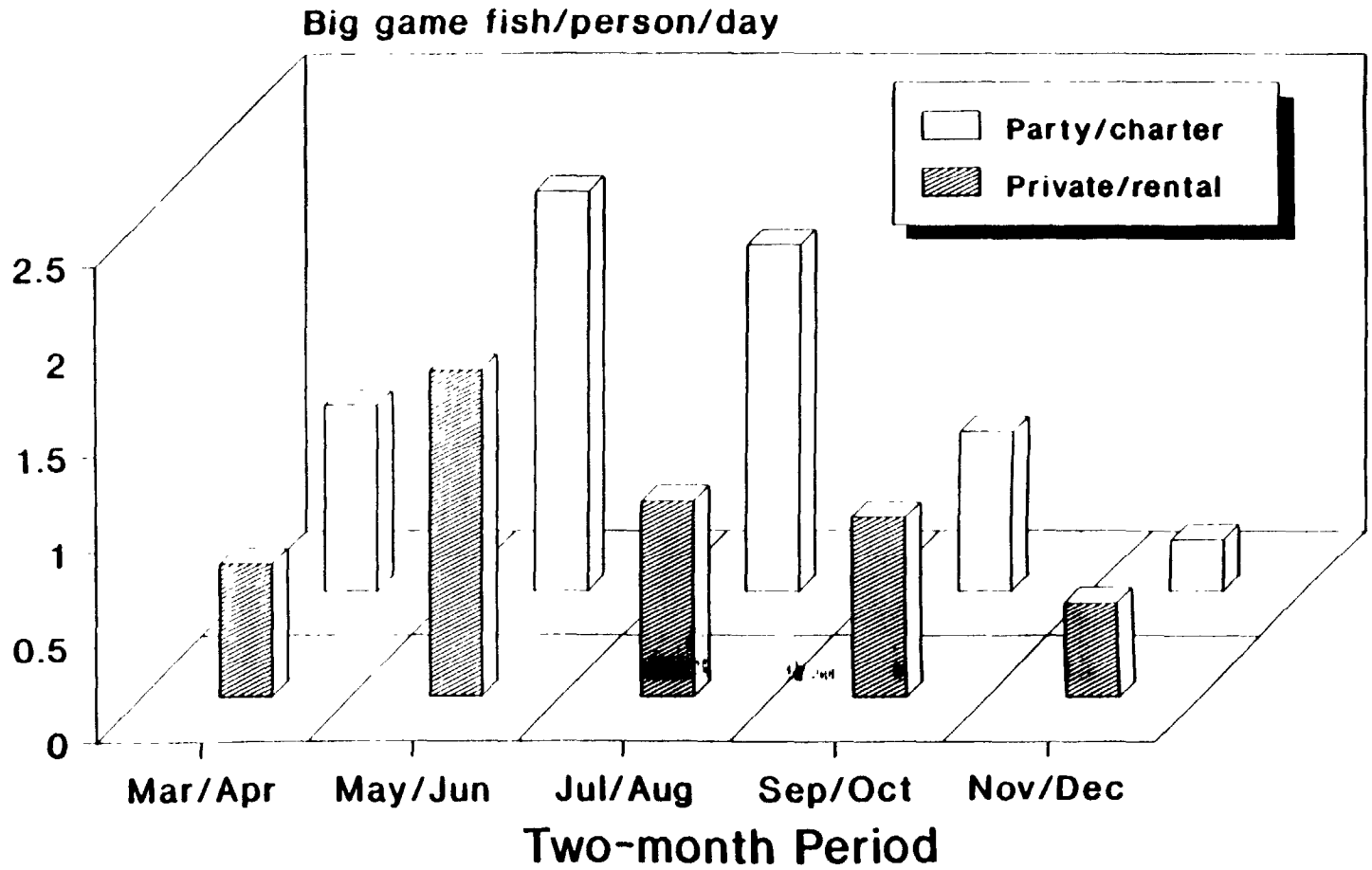
Fig. FL1: Big game Catch Per Day, South Florida, By Year and Mode



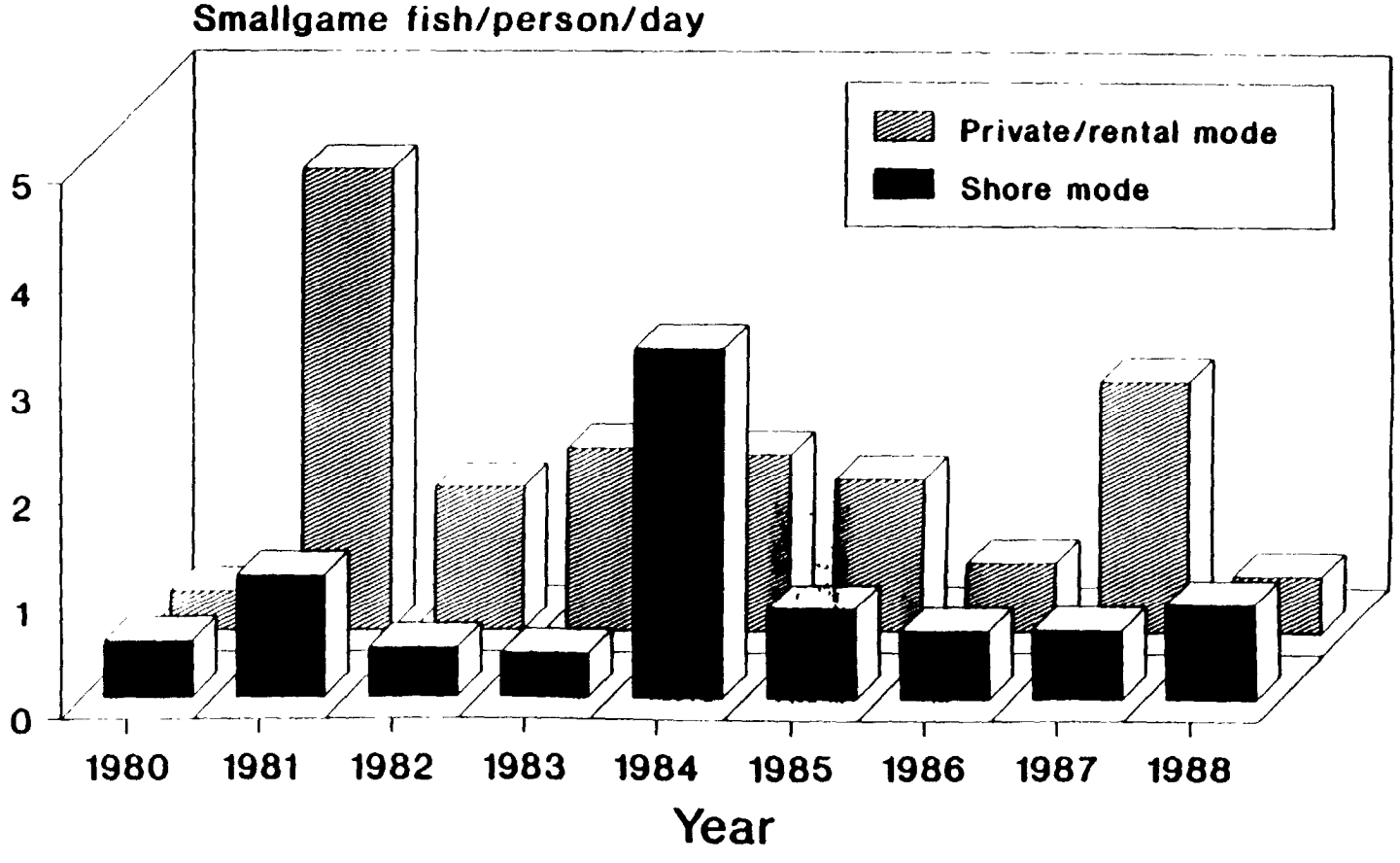
For individuals targeting big game.
Counites south of Volusia County.
1980-1988

Fig. FL2: Big game Catch Per Day, South Florida, By Wave and Mode



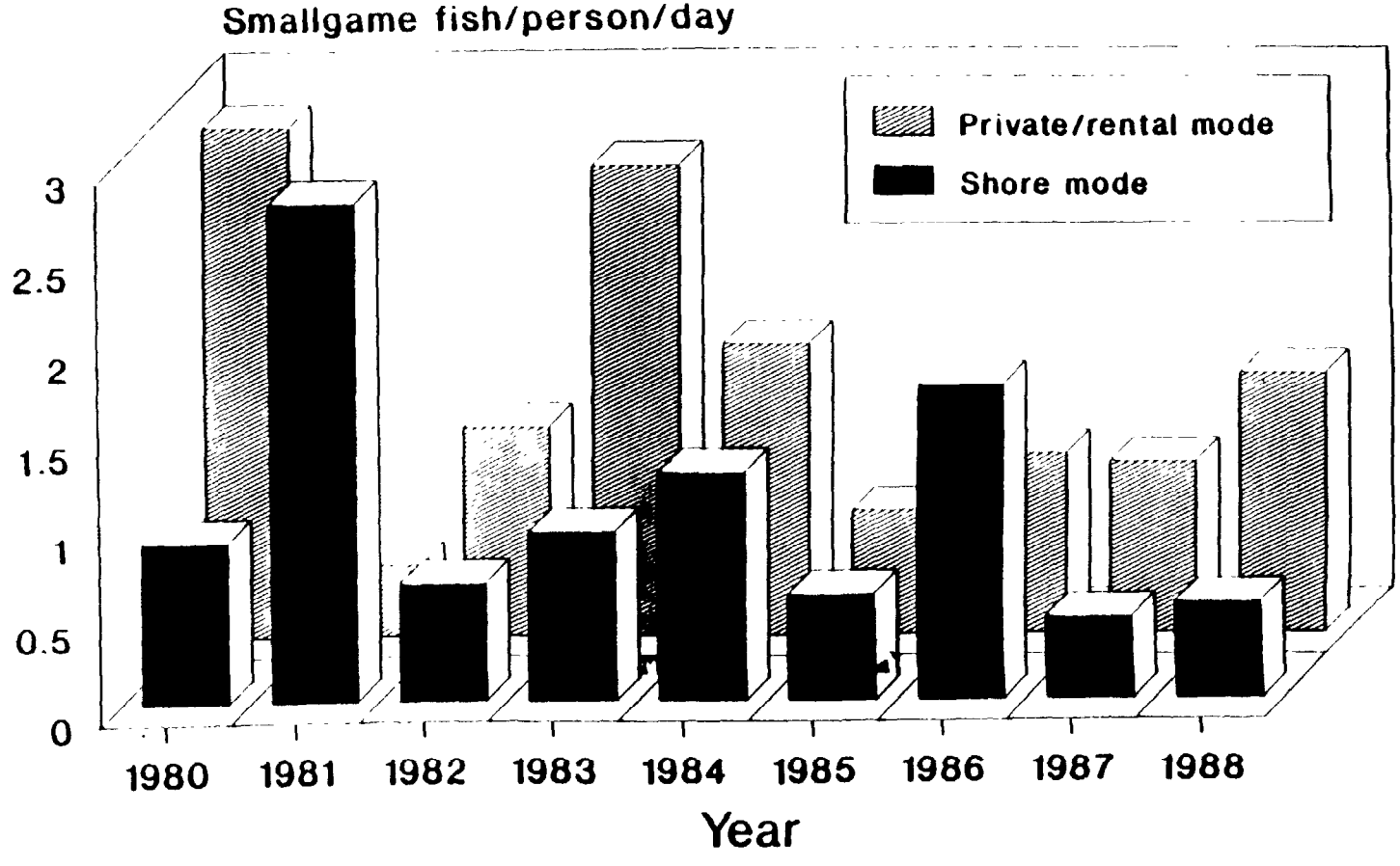
Average for individuals targeting big game, 1980-1988.

Fig. FL3: Smallgame Catch Per Day, North Florida, By Year and Mode



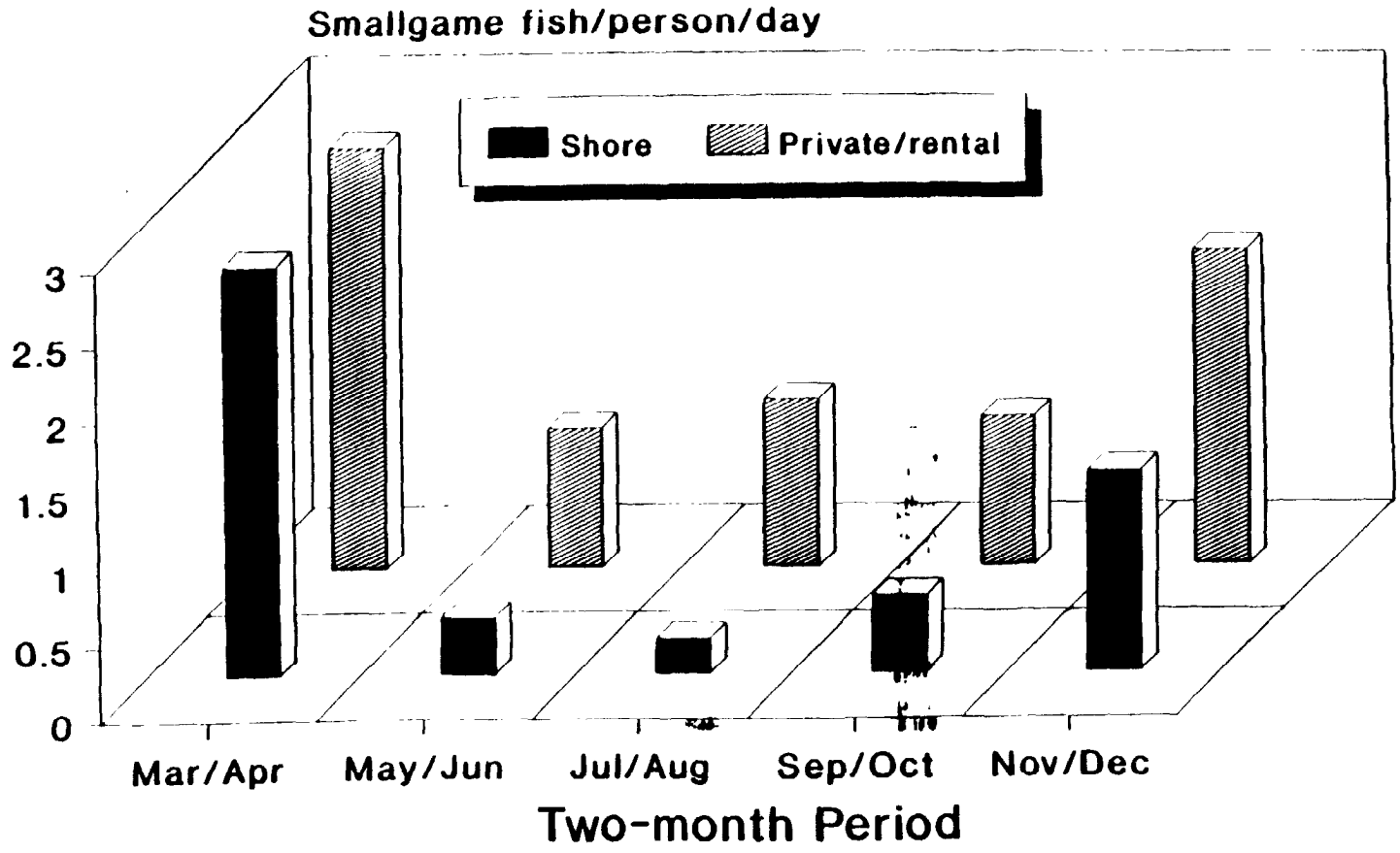
For individuals targeting smallgame.
Volusia County and north.
1980-1988.

Fig. FL4: Smallgame Catch Per Day, South Florida, By Year and Mode



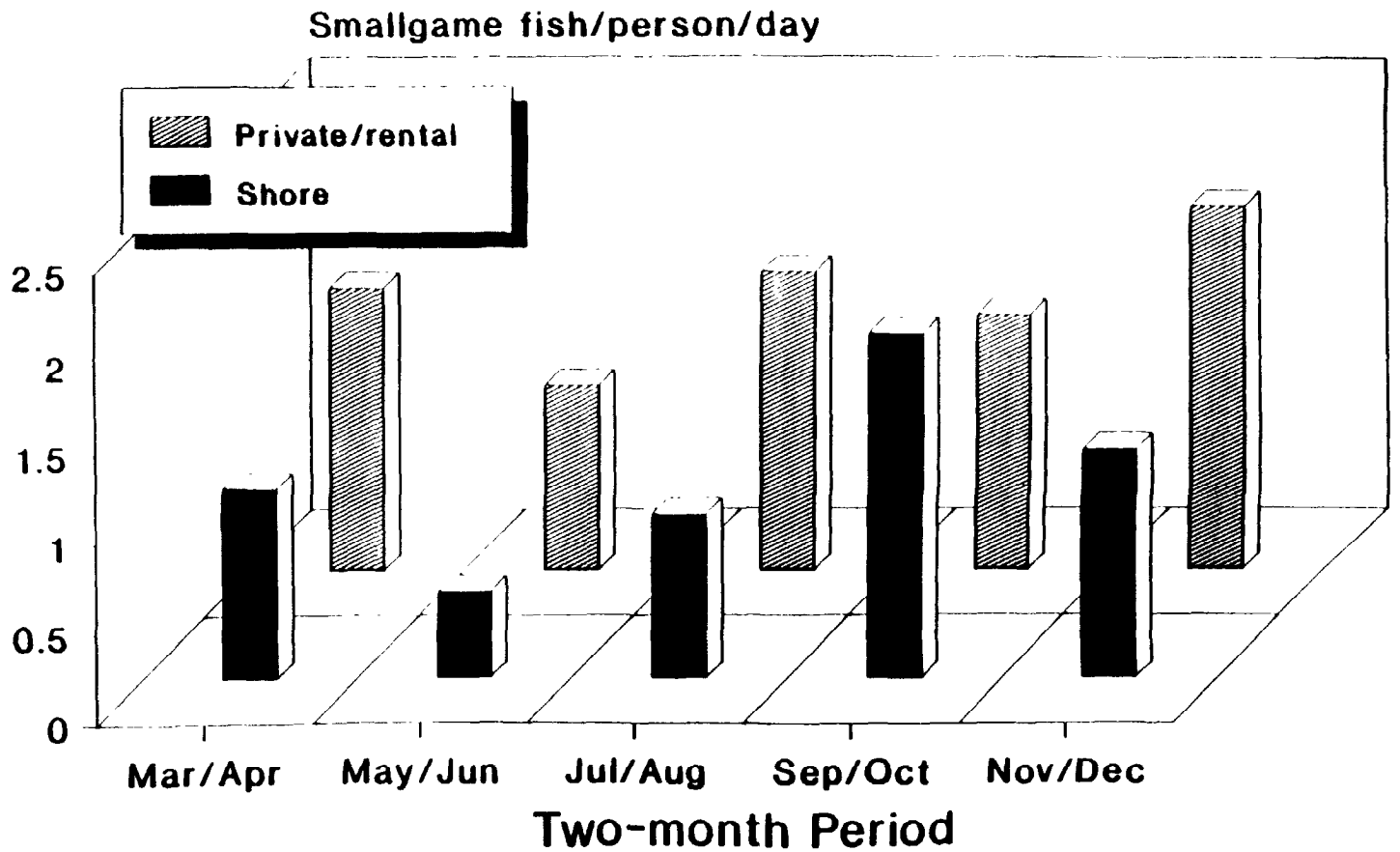
For individuals targeting small game.
Counties south of Volusia County.
1980-1988.

Fig. FL5: Smallgame Catch Per Day, North Florida, By Wave and Mode



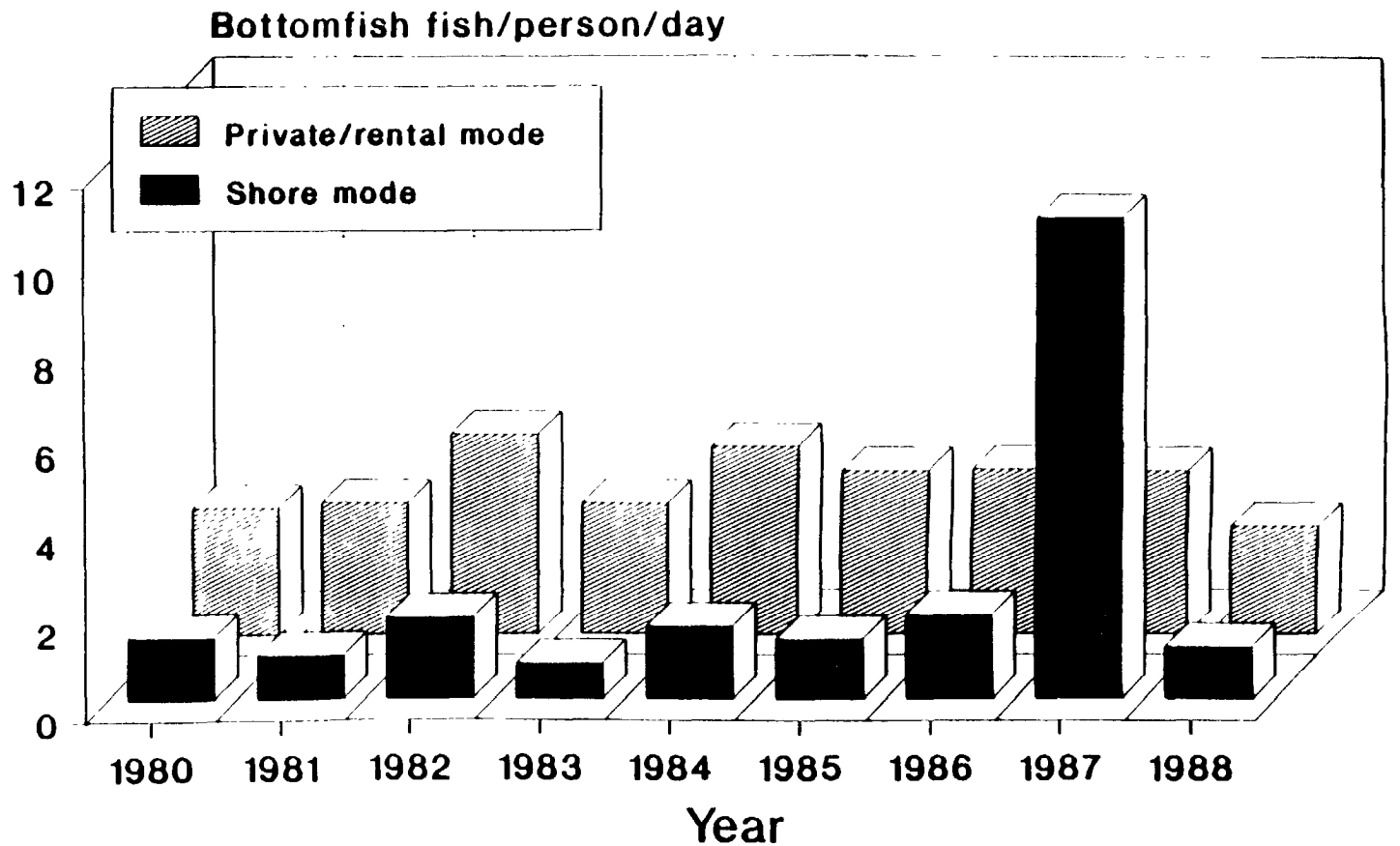
Average for individuals targeting small game, for Volusia County and north. 1980-1988.

Fig. FL6: Smallgame Catch Per Day, South Florida,By Wave and Mode



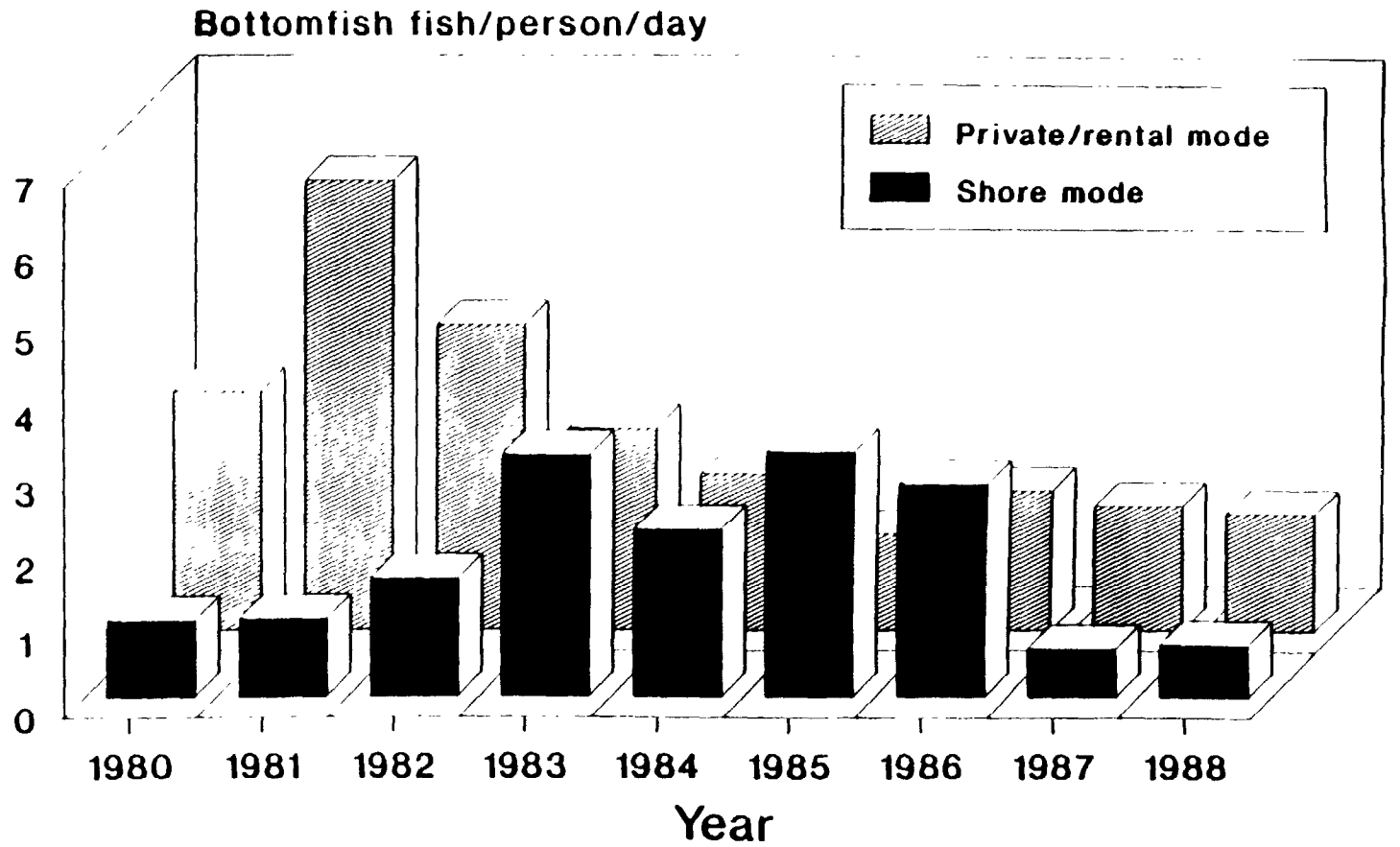
Average for individuals targeting small game, counties south of Volusia County, 1980-1988.

Fig. FL7: Bottomfish Catch Per Day, North Florida, By Year and Mode



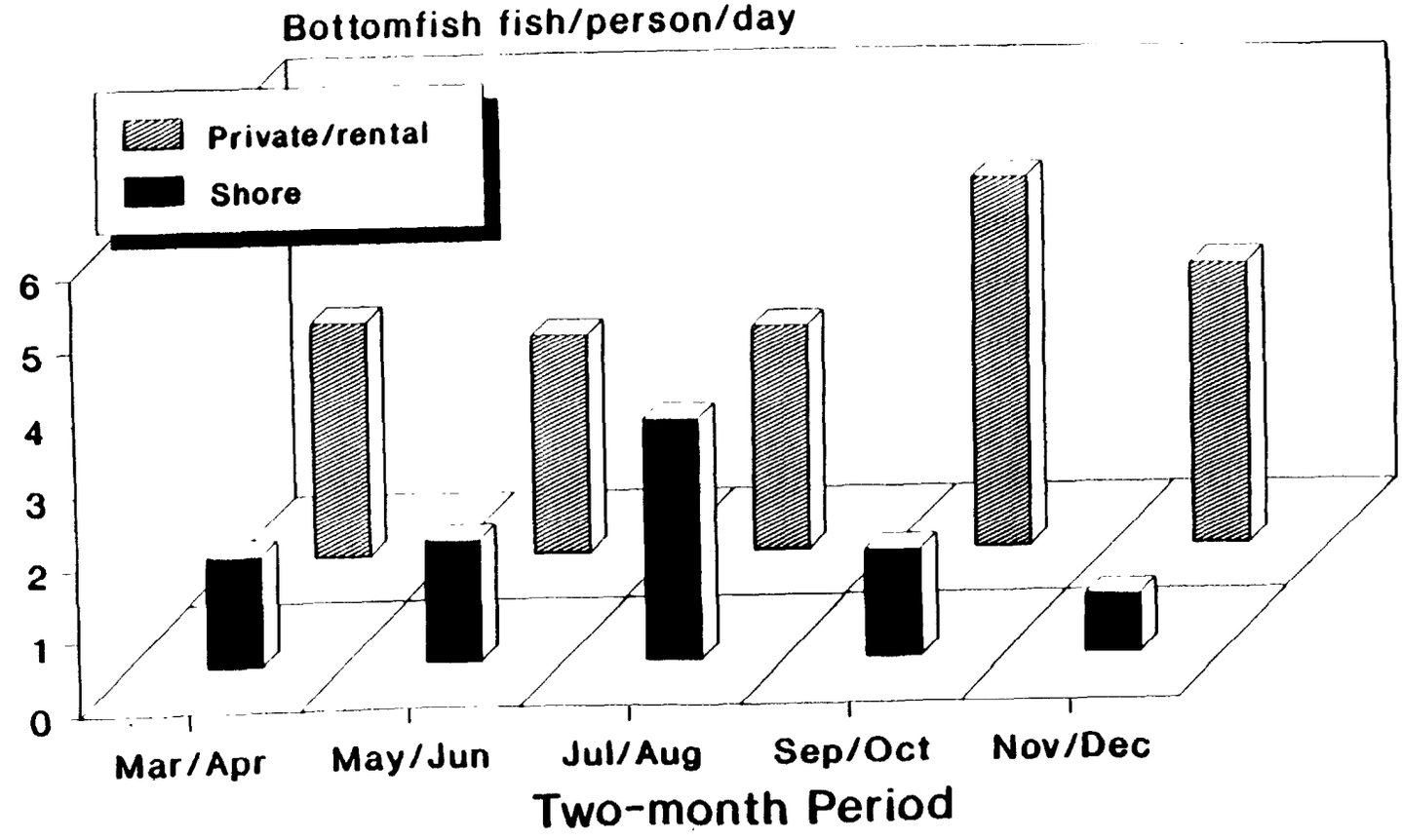
For individuals targeting bottomfish.
Volusia County and north.
1980-1988.

Fig. FL8: Bottomfish Catch Per Day, South Florida, By Year and Mode



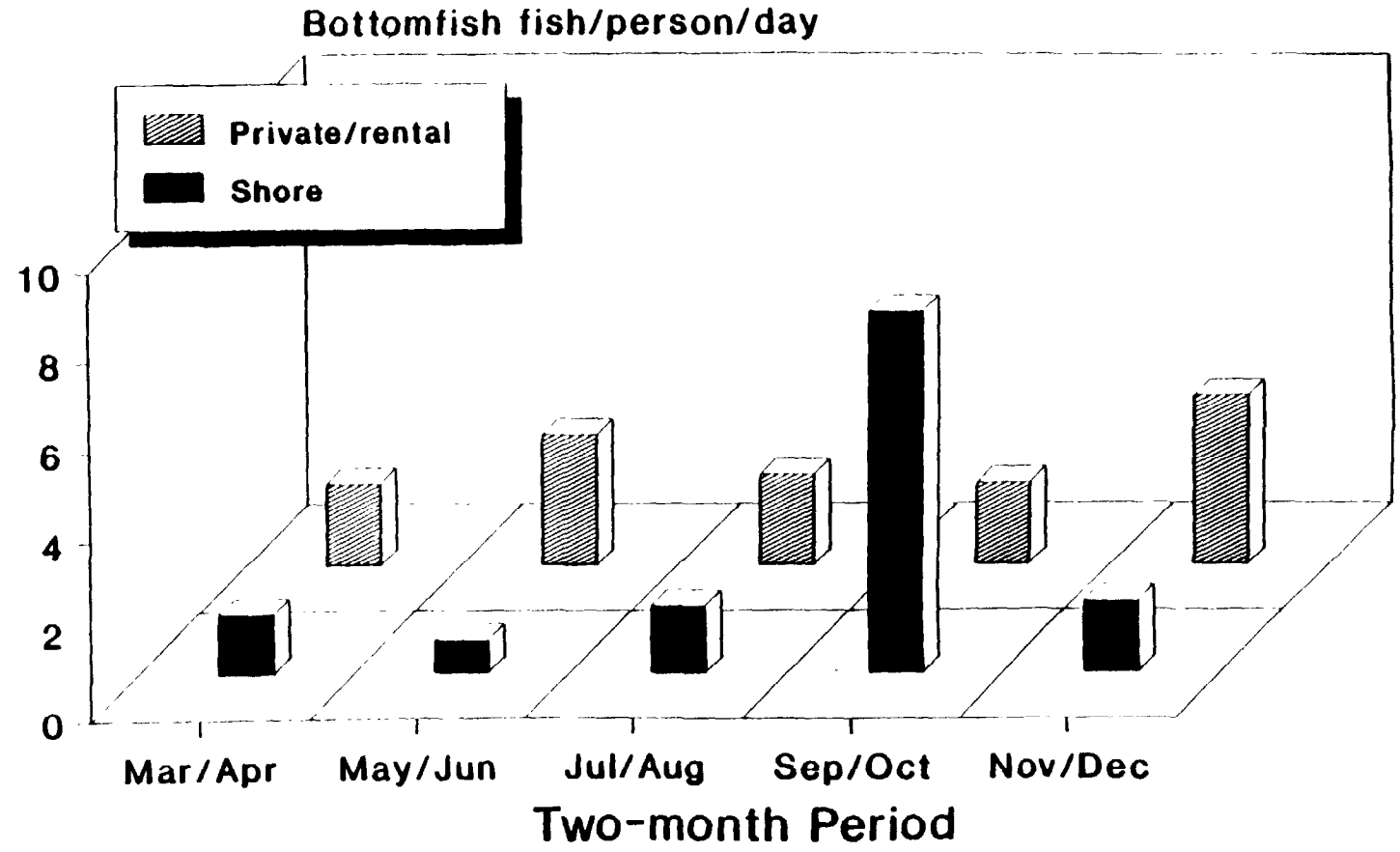
For individuals targeting bottomfish.
Counties south of Volusia County.
1980-1988.

Fig. 9: Bottomfish Catch Per Day, North Florida, By Wave and Mode



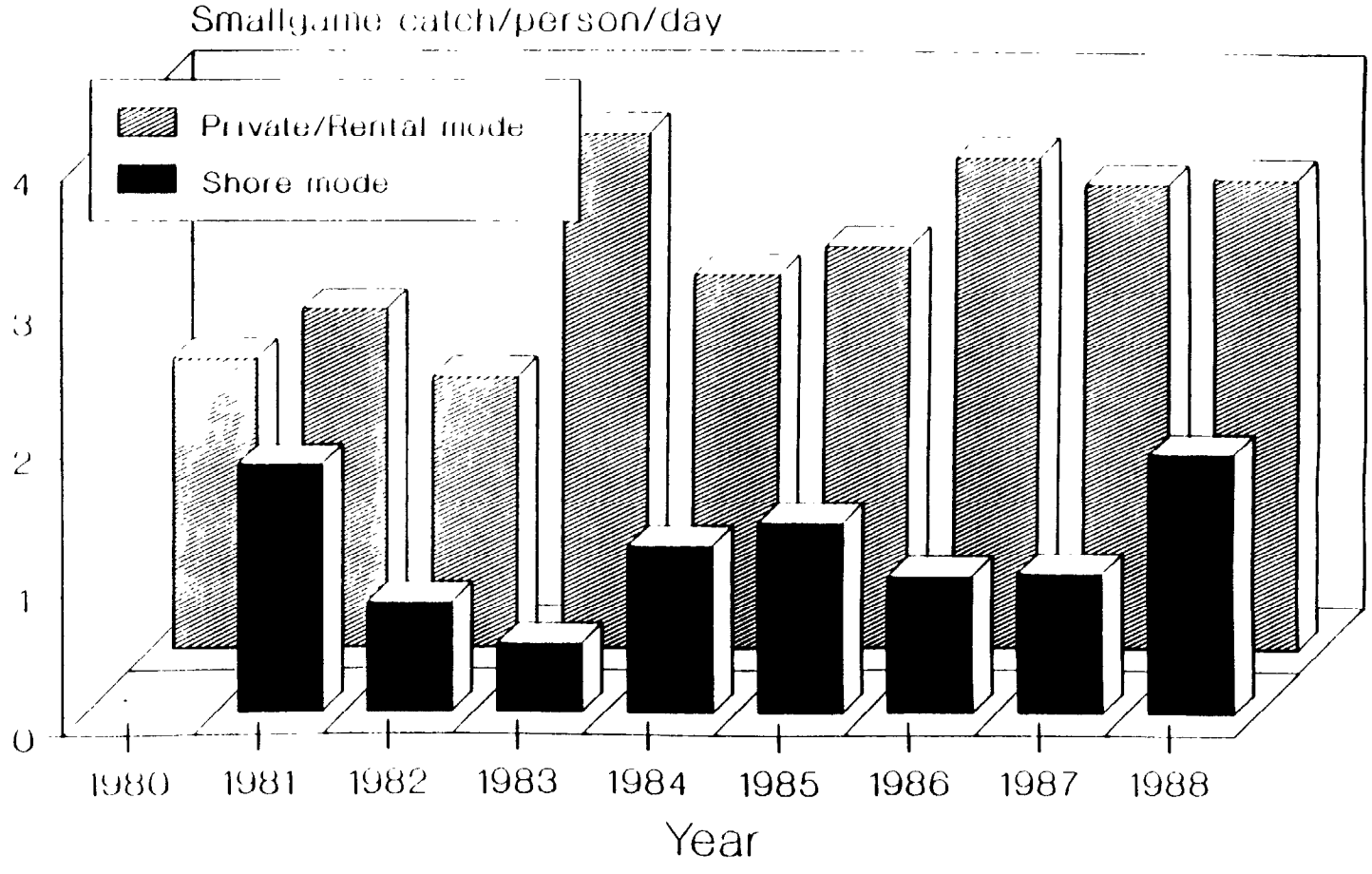
Average for individuals targeting bottom fish. Average for Volusia County and northward. 1980-1988

Fig. FL10: Bottomfish Catch Per Day, South Florida, By Wave and Mode



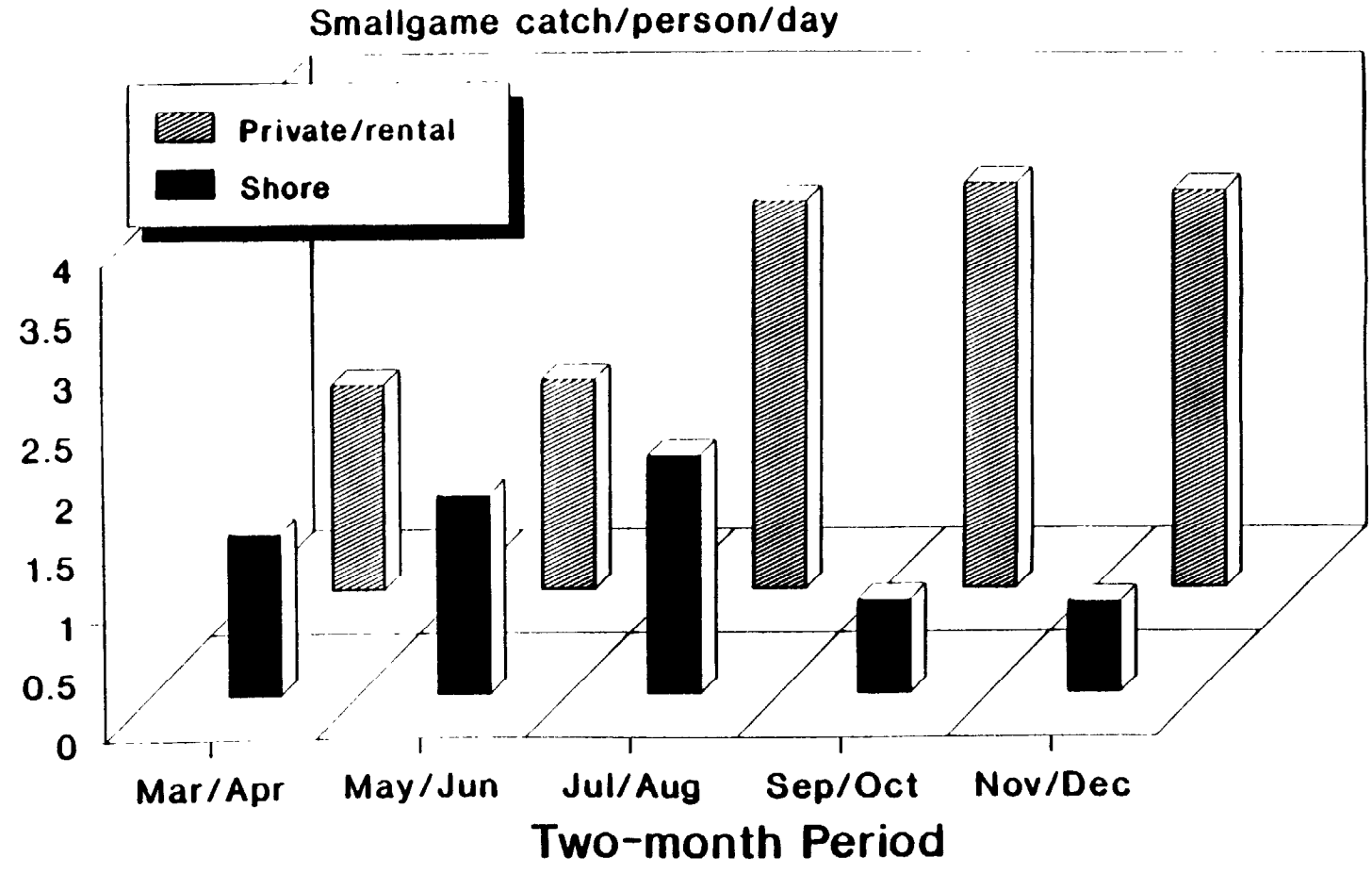
Average for individuals targeting bottom fish. Average for counties south of Volusia County. 1980-1988.

Fig. GA1: Smallgame Catch Per Day, Georgia, By Year and Mode



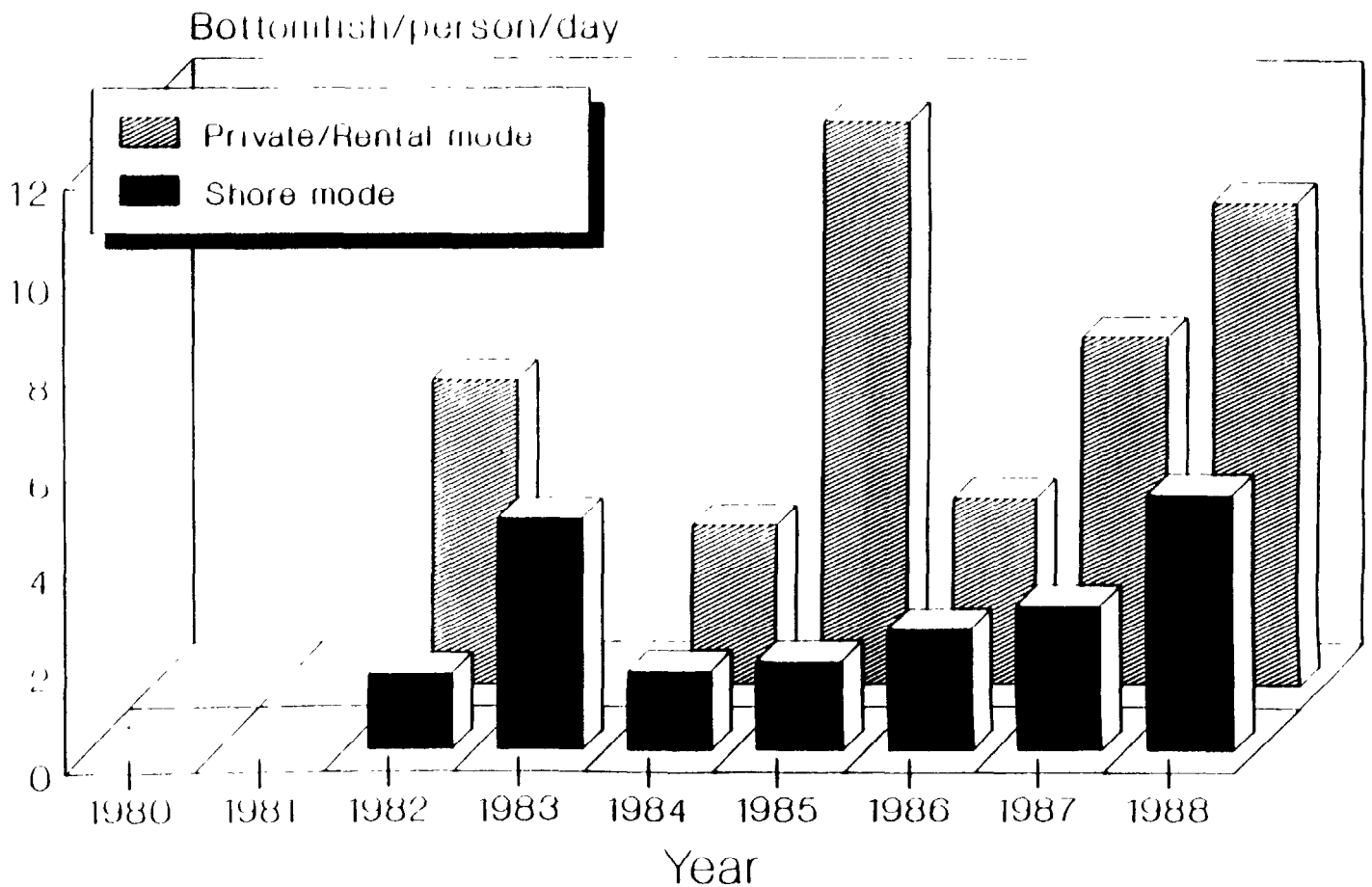
For individuals targeting smallgame
1980-1988

Fig. GA2: Smallgame Catch Per Day, Georgia, By Wave and Mode



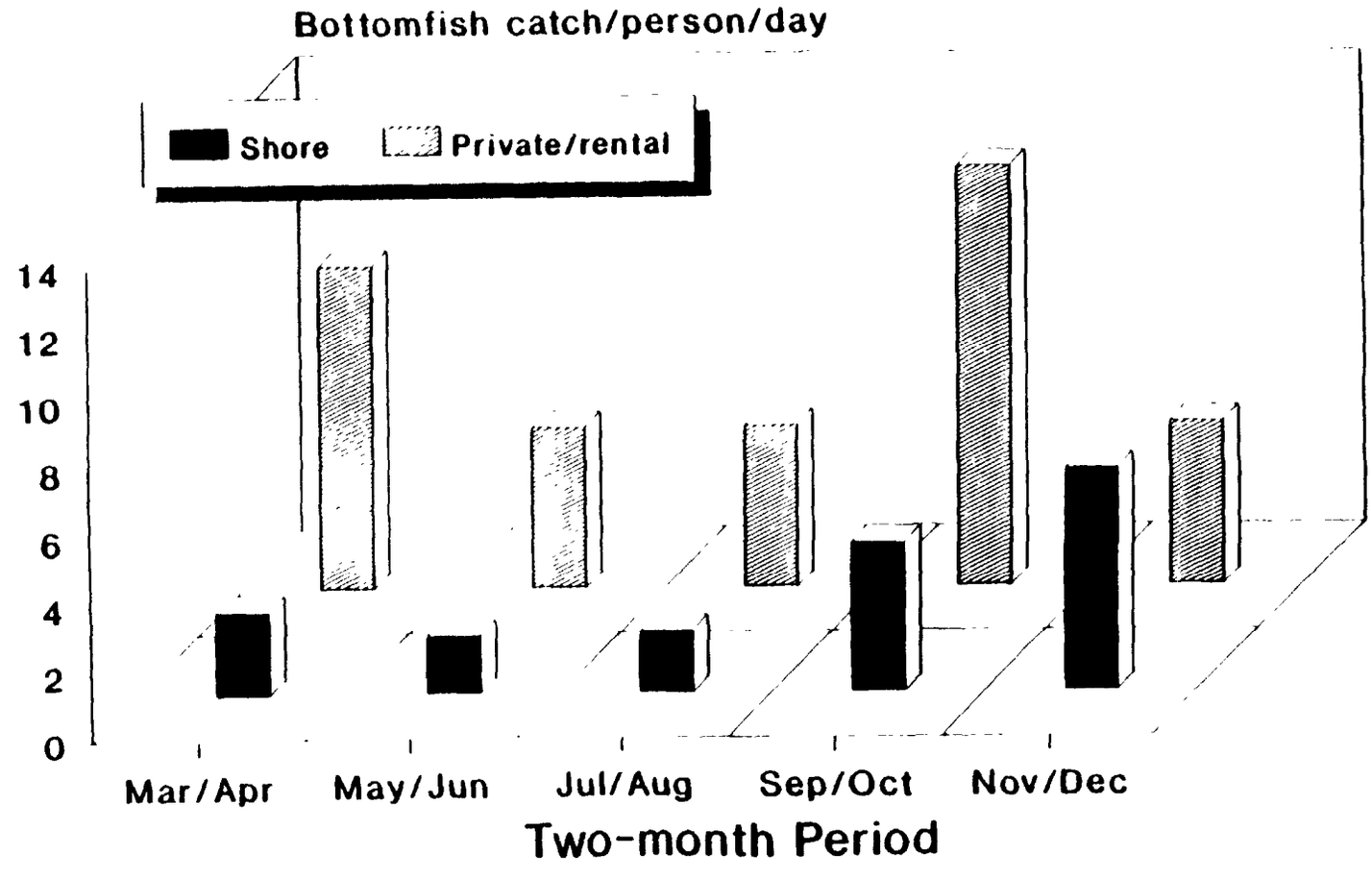
Average for individuals targeting small game, 1980-1988.

Fig. GA3: Bottomfish Catch Per Day, Georgia, By Year and Mode



For individuals targeting bottomfish
1980-1988

Fig. GA4: Bottomfish Catch Per Day
Georgia, By Wave and Mode



Average for individuals targeting bottom fish, 1980-1988.

Chapter 10

SPORTFISHING IN FLORIDA

Activity by Florida Households

The coast of Florida offers many varieties of marine recreational fishing. Florida's east coast alone, from the Georgia border through Dade County, encompasses over 500 miles of coastline. This report deals only with the east coast, excluding the Florida Keys south of Dade County and the Gulf coast. The coastline is sufficiently long that fishing experiences vary greatly from one end of the state to the other. Fishing along the coast of northern Florida is similar in character to fishing along other south Atlantic states. But southern Florida can be quite different. with coral reef and other tropical fishing accessible by boat from Dade County. The length of the state is sufficient that seasonal factors which affect fishing in the northern part of the state may not be felt farther down the coast.

The marine waters and the attractive winter climate originally attracted people to Florida. Consequently, most of the population is located close to the coast and is eligible for the NMFS phone survey. The sample frames vary according to the wave. For March-April and November-December, only households who live in counties within 25 miles of the east coast or an estuary of the east coast are eligible. But from May through October, households who live in countries 50 miles from the coast are eligible. There are 2,170,200 households eligible in the 25 mile counties according to the 1980 Census and only about three percent more (2,226,400) in the 50 mile counties. The proportion of Florida marine sportfishing participants who reside in Florida coastal counties has remained exceptionally stable over the decade, at about 60 percent. Virtually

all the remaining participants come from out-of-state. A similar stable pattern exists in trips, with coastal county residents accounting for over 80 percent of the trips taken in marine waters on the east coast of Florida.

Sportfishing Activity: Household Participation Rates and Quantity of Trips by Season

The participation rates by wave and year are given in Table FL.1. These rates vary from a high of 20.5 percent in July-August 1987 to a low of 6.1 percent in September-October 1983. These rates have small standard errors, typically less than one percent. The sample sizes range from a high of 5267 for July-August 1988 to a low of 833 for November-December 1986. There is substantial variation over the years within seasons and some seasonal variation. All of the rates in 1989 and all but one in 1988 are less than the means.

The seasonal variation is not pronounced, although participation rates in September-December are almost always below those of other waves. The mean rate for July-August is the highest, but in seven of the ten years, the highest seasonal rate occurs in March-April or May-June. The intra-seasonal variation is quite a bit different from the northern states. In many states, the July-August wave exhibits the least variability, but in Florida it is the least stable with a range of 11.4 percentage points from 1987 to 1988.

It is not apparent that any trend exists in the Florida participation rates (Table FL.2). It is true that the 1988 and 1989 rates are nearly all less than the mean rates. But the waves behave differently. The linear trend analysis shows no significant systematic movements in participation for any of the waves.

Trends and variability can also be inferred from data on trips. Aggregate trips can be estimated as the product of trips per household called and the number of eligible households. (It could also be calculated as the product of trips per fishing household, the participation rate of households called, and the number of eligible households.) Table FL.3 gives the trips per household called by wave and year. The mean trips per household called using all nine years of data are distributed seasonally as follows:

	Mean Trips	Percent of Annual Mean
March-April	.58	19.7
May-June	.65	22.1
July-August	.73	24.8
September-October	.49	16.7
November-December	.50	17.0

These figures suggest the same pattern of declining activity in September through December. As with participation rates, however, interpretation of seasonal behavior is complicated by the changing sample frame. Participation and trips are both likely to be overestimated in waves 2 and 6 relative to waves 3 through 5 because the latter include some households farther from the coast. But since the difference between the two sample frames is minimal for Florida, we can largely ignore this complication.

The trips per household called in Table FL.3 do not show any obvious annual trend except that trips per household are low in 1988. There is considerable variability in the trips by wave, both within and among seasons.

Sportfishing Activity by Mode

The distribution of fishing trips among the various modes of fishing helps illustrate the nature of the fishing activity and the impact the seasons have on it. Table FL.4 gives these measures by wave and mode, averaged over the nine years of the telephone survey. These percents, means for nine years, are relatively constant over seasons. About 90 percent of the fishing trips are from shore or from private/rental boats. The latter claims a distinctly larger percent of trips in all but the March-April wave. The usual effect from inclement weather, found in the more northerly states, is absent in Florida. The percent allocated to private/rental boats is lowest in early spring and early fall.

To gain some sense of how the magnitude of fishing changes by wave and mode, we exploit Table FL.3, which gives trips per household per wave, along with information on the number of eligible households. According to the 1980 census, there were 2,226,400 in the 50 mile counties. (Because the difference between the 25 mile coastal counties and the 50 mile coastal counties is so slight, we will use the 50 mile households throughout.) From Table FL.3, there were an average of .58 trips per household called during March-April implying aggregate trips of 1,291,312. Of these 45.2 percent or 538,673 would be attributed to boat trips. During July-August. aggregate trips were 1,625,272 (= .73 * 2,226,400) of which 51.7 percent or 840,265 were private/rental boat trips. This is a considerable level of fishing effort, even for the extensive coast of Florida. These show that even when the seasonal shifts in trips and proportions are small, large changes in fishing activity emerge because of the large number of participants.

Sportfishing Activity by Waterbody

Table FL.5 gives information about fishing by coastal households in different waterbodies. The percents are averaged over the nine year sample. The NMFS waterbodies - ocean, gulf and open bay; sound; river; enclosed bay - are not well suited for Florida. For example, there is a great deal of fishing in the Indian River, but it is not really a river, simply a bay or part of an estuary and it is not clear how households would categorize it. Similarly, households' differing interpretations of enclosed bay and open bay/ocean will affect responses.

Despite the ambiguities, some useful information is revealed by the data. The importance of ocean, gulf and open bay is evident from Table FL.5. Over 60 percent of the fishing occurs in the ocean, gulf, and open bay category. The proportion in the ocean, gulf and open bay increases only slightly during the summer. The second most popular type of waterbody is river but whether this includes much of the fishing on the Indian River is difficult to say. Table FL.5 can be used in conjunction with trips per household and the number of eligible households to calculate the number of total trips in different areas at different times. For example, of the 1,625,272 coastal county trips in July-August, 69.7 percent or 1,132,815 could be attributed to ocean/open bay. This information, when combined with the information on the number of boating trips suggests that the bulk of the boating trips are in seaworthy boats, at least capable of venturing into open bays.

Catch Rates in Florida

Because the East Coast of Florida is so long and has such diverse fishing, we chose to examine the catch rates based on a northern division (sites from Volusia county northward) and a southern division (sites south of Volusia County, to and including Dade County). The

distinction is important for two reasons: the species availability/abundance varies by area and the type of fisherman differs. In the south, there are more out-of-state fishermen, and more party/charter activity. The closeness of the Atlantic Ocean's Gulf stream in southern Florida alters the species composition.

Florida is similar to Georgia in the large proportion of saltwater anglers who do not target a species. For the decade, Florida had the largest percentage of anglers not targeting (-62 %). Like Georgia, this percentage grew during the decade, from 55 percent in the first half to 66 percent in the latter half. The rise came at the expense of the big game and bottomfish targets. The percentage of anglers targeting big game fell from 16 percent to 8 percent while the fall in bottomfish targeting was from 12 to 9 percent. Smallgame attracted a constant 16 percent in both halves of the decade. Flatfish were targeted by only 1 percent of the anglers.

Big game

In southern Florida, there is significant activity directed towards big game both from party/charter boats and from private/rental boats. The nearness of the gulf stream brings many of the highly migratory billfish and tuna into areas easily accessible by these boats. In recent years, dolphin has been the principal target species, sought by 60 percent of the anglers targeting big game. The other important targeted species are sailfish (26%) and wahoo (8%). This represents slightly more targeting of sailfish and wahoo than was experienced in the early 80's.

The trends in big game catch rates over the decade are shown in Figure FL1 for private/rental and party/charter fishermen. The highest catch rates were experienced during the early 1980's for both modes of fishing. The last several years show a significant decline in catch

rates. From this aggregated data, it is impossible to determine whether this represents a shift in targeted species towards less abundant species or a general decline in availability.

Catch rates vary substantially through the year (FL2). The highest catches per day are experienced during the summer months, from May through August. The lowest daily harvests occur in the November/December period. The March/April and September/October catch rates are similar but low.

Smallgame

The small game targeted in Florida are primarily bluefish, spotted seatrout, king and spanish mackerel, red drum, snook, and pompano. The primary modes of fishing smallgame are shore and private/rental boat. Bluefish was sought by 30% of the targeting smallgame anglers in the 80-84 period but its share has fallen to less than 18% in the recent years. King mackerel and spotted seatrout have increased in importance, rising from around 17% to around 25%.

The relative importance of different species varies from north to south. The red drum and spotted seatrout are particularly important in the north, whereas snook is only targeted in southern Florida. Bluefish, spanish and king mackerel are important in both areas, with slightly higher shares of targeting anglers found in the south.

Catch rates in northern Florida over the decade have varied with no apparent trend (Fig. FL3). The best year for fishing from shore was 1984, and the best year from a private/rental boat was 1981. The same lack of trend was evidenced in southern Florida (Figure FL4). Here, shore anglers experienced unusually high catch per day in 1981, while

private/rental fishermen were most successful during 1980 and 1983. It may be noteworthy that most of the high catch rate years occurred prior to 1985.

Catch rate of smallgame in the north is highest in the November/December and March/April periods (Fig. FL5) for both the shore and private/rental modes. The months from May through October generally yield less than one-half the catch per day experienced in the better waves. This is similar to, but far more pronounced than, the pattern observed in southern Florida (Fig. FL6) where there is not a great deal of difference across waves. The worst period for catching smallgame in southern Florida appears to be in May and June. This is coincidentally the period of highest big game harvest.

Bottomfish

There are a variety of bottomfish species targeted in Florida, with no one species attracting a dominant share of anglers. The snapper group, however, has been consistently sought by between 30% and 35% of directed targeting fishermen. Many anglers target a "generic" snapper, not focusing on any particular variety. Fishermen who do seek a specific snapper species are most likely to target red snapper or yellowtail snapper. Gray and mutton snappers have become popular in the period 1985-1988. The other important bottomfish are sea basses, gag, sheepshead, southern kingfish and Atlantic croaker. Once again, the importance of the species varies from north to south. In the north, the sheepshead, kingfish and croaker are relatively more important whereas snapper and gag are more important in the south.

There does not appear to be an annual trend in the catch rate of bottomfish in northern Florida for either the shore or private/rental boat mode (Fig. FL7). The shore fishing mode had

an unusually high catch in 1987. The private/rental mode of fishing produced a consistent catch rate in the range of two to four fish per day. In southern Florida, the best shore fishing for bottomfish occurred during the middle of the decade and the worst during 1987 and 1988 (Fig. FL8). The only discernible trend in Florida bottomfishing is evidenced in the catch rate of private/rental boat fishing. Here, a peak occurred in 1981 with a steady decline through 1988.

No strong seasonal variation exists in catch rates per day by private/rental boat fishermen (Fig. FL9 and Fig. FL10). The best catches in the north occur in the September/October period, although the differences between months are minor. In the south, private boat fishermen experience the highest catches in the November/December period. Shore fishermen appear to have more dominant seasons, with the July/August period being the best in the north and the September/October period the best in the south.

Characteristics of Fishing Trips in Florida

In addition to the previous information on the distribution and biological aspects. information about individual trips can be useful in understanding the sportfishery. The survey by UMCP gathered information about the nature of fishing trips in Florida waters in 1988. This section describes some of the economic characteristics.

Table FL.6 gives characteristics for one day fishing trips by mode in Florida regardless of origin. There are six modes in the UMCP survey: pier (artificial structure), beach, party boat, charter boat, rental boat, and private boat. However, there were not enough observations for the rental mode to make reliable estimates of the mean characteristics of rental trips For the other modes, low travel costs suggest closeness of residences to the water. Many of the fishing

trips in Florida are made by households who live along the shore. The charter travel cost is higher, because charter outlets are less widely distributed than beach and other fishing modes. The higher costs for bait on charter and private boats stems from more intensive fishing, and perhaps longer fishing trips. The high tackle costs for charter fishing may mean that in some cases the service is not covered by the basic charter fee. Basically the costs of fishing services--costs separate from the travel costs--appear reasonable within, and consistent across, mode.

People also take fishing trips in Florida as part of overnight trips. Because they are then typically lodged close to the marine waters, the characteristics of their trips are likely to be different. Table FL.7 gives the characteristics of trips which are part of overnight visits to Florida. These trips are closer to the fishing, as the travel time and distance show, being smaller than for the day trips. The costs for fishing services are similar to the costs for the single day trips. The trip length, the number of days of the visit to Florida, is 22.5, quite long compared to other states.

Table FL.8 shows the distribution of fishing trips among different species groups by mode. Big game fishing is more important for Florida than for other states. The percents for boat fishing are quite high. Small game fishing is less important. For example, less than a third of boat trips are directed towards small game.

Table FL.3

Trips Per Household Called
By Year and Season*

Year	Total	Wave				
		March-April	May-June	July-August	September-October	November-December
1981	2.43	.51	.64	.50	.36	.43
1982	3.13	.84	.67	.67	.41	.54
1983	2.85	.40	.66	.83	.47	.48
1984	3.20	.48	.64	.89	.62	.58
1985	3.22	.71	.84	.66	.55	.17
1986	2.87	.51	.57	.86	.56	.38
1987	3.69	.67	.64	.97	.63	.78
1988	2.13	.50	.56	.45	.29	.33
1989	NA	NA	NA	NA	NA	NA
Mean	2.94	.58	.65	.73	.49	.50

* Trips taken within state of residence.

Table FL.4

Percent of Fishing Trips in Various Modes by Wave
Mean 1981-1988

Mode	Wave				
	March-April	May-June	July-August	September-October	November December
Shore	45.9%	38.6%	42.0%	47.3%	41.2%
Party/Charter	8.9	9.7	6.3	7.6	7.4
Private/Rental	45.2	51.7	51.7	45.1	51.4

Table FL.5

Percent Fishing Trips in Various Areas, by Wave
Mean 1981-1988

Area	Wave				
	March-April	May-June	July-August	September-October	November-December
Ocean, Gulf, Open Bay	64.8%	66.7%	69.7%	63.9%	64.9%
Sound	6.4	2.1	3.5	2.6	3.0
River	17.0	17.4	14.4	16.7	21.4
Enclosed Bay	9.7	9.2	6.7	12.6	6.4

Table FL.6

Average Characteristics of Day Trips in Florida, by Mode
(per trip averages)

	Mode					
Characteristic	Pier	Beach	Party	Charter	Rental	Private
Travel Cost	$4.43	$3.68	$5.03	$9.35		$6.85
Costs for						
Bait	3.25	4.05	3.58	7.33		6.83
Tackle	4.14	2.37	3.02	14.31		5.29
Cleaning	.75	7.49	.63	2.06		1.72
Fuel	-	-	-	-		15.42
Pier Fees	1.17	-	-	-		-
Boat Fees[a]	-	-	3 1.52	117.43		-
Travel Time (in minutes)	24.5	24.0	35.7	30.5		24.3
Distance (in miles)	14.6	14.4	25.4	17.5		13.2
Boat Time to first site (in minutes)	-	-	64.4	33.9		23.8
Number of Observations	364	146	33	107		1421

[a] Boat fees are charter and party fees or rental fees.

Table FL.7

Characteristics of Trips for Overnight Visits in Florida

Characteristic	Mean	Number of Applicable Oservations
Travel Cost	$7.33	257
Cost for		
Bait	5.96	259
Tackle	6.62	266
Cleaning	.92	268
Fuel	17.07	133
Pier Fees	.89	56
Boat Fees	221.29	46
Travel Time (in minutes)	16.9	262
Distance (one-way) (in miles)	6.9	262
Boat Time (in minutes)	26.0	177
Trip Length (in days)	22.4	270

Table FL.8

Percent of Trips Seeking Different Species Groups, by Mode
for Day Trips

	Mode				
Species Group	Pier	Beach	Party	Charter	Private
Big Game	4.7%	2.3%	25.0%	69.1%	43.6%
Small Game	59.7	60.7	25.0	14.6	32.8
Flatfish	8.7	13.5	0.0	1.8	2.2
Bottomfish	25.5	22.5	50.0	12.7	21.2

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